FORM PTO-1390 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NO. PHN 17,522
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		U.S. Application No. (if known, see 37 CFR 1.5) 09/763439
INTERNATIONAL APPLICATION NO. PCT/EP00/05891	INTERNATIONAL FILING DATE JUNE 23, 2000	PRIORITY DATE CLAIMED JUNE 29, 1999

TITLE OF INVENTION
DATA ALLOCATION IN DVD RECORDING

APPLICANT(S) FOR DO/EO/US
WIEBE DE HAAN

Applicant(s) herewith submit to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.

2. [ ] This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.

3. [ ] This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).

4. [ ] A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.

5. [X] A copy of the International Application as filed (35 U.S.C. 371 (c)(2))
    a. [X] is transmitted herewith (required only if not transmitted by the International Bureau).
    b. [ ] has been transmitted by the International Bureau.
    c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US).

6. [ ] A translation of the International Application into English (35 U.S.C. 371(c)(2))

7. [X] Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
    a. [ ] are transmitted herewith (required only if not transmitted by the International Bureau).
    b. [ ] have been transmitted by the International Bureau.
    c. [ ] have not been made; however, the time limit for making such amendments has NOT expired.
    d. [X] have not been made and will not be made.

8. [ ] A translation of the amendment to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).

9. [X] An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).

10. [ ] A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. [X] An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98.

12. [X] An assignment document for recording. A separate cover sheet in compliance with 37 C.F.R. 3.28 and 3.31 is included.

13. [ ] A FIRST preliminary amendment.
    [ ] A SECOND OR SUBSEQUENT preliminary amendment.

14. [ ] A substitute specification.

15. [X] A change of power of attorney and/or address letter.

16. [X] Other items or information:

    a) AUTHORIZATION PURSUANT TO 37 CFR 1.136(a)(3)
    b) SIX (6) SHEETS OF FORMAL DRAWINGS
    c) APPLICATION AS PUBLISHED (WO 01/01416)

CERTIFICATE OF EXPRESS MAILING

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I hereby certify that this paper and/or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington D.C. 20231

Noemi Chapa
Typed Name   Signature

U.S. APPLICATION NO. (Known when see 37 C.F.S. 1.5) 09/763459	INTERNATIONAL APPLICATION NO. PCT/EP00/05891	ATTORNEY'S DOCKET NUMBER PHN 17,522

17 [X] The following fees are submitted:

CALCULATIONS (PTO USE ONLY)

BASIC NATIONAL FEE (37 C.F.R. 1.492(A)(1)-(5)):

Search Report has been prepared by the EPO or JPO	$940.00	
International preliminary-examination fee paid to USPTO (37 C.F.R. 1.482)	$720.00	
No international preliminary examination fee paid to USPTO (37 C.F.R. 1.482) but international search fee paid to USPTO (37 C.F.R. 1.445(a)(2)	$760.00	
Neither international preliminary examination fee (37 C.F.R. 1.482) nor international search fee (37 C.F.R. 1.445(a)(2)) paid to USPTO	$970.00	
International preliminary examination fee paid to USPTO (37 C.F.R. 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4)	$ 96.00	
ENTER APPROPRIATE BASIC FEE AMOUNT =		$970.00

Surcharge of $130.00 for furnishing the oath or declaration later than [ ] 20 [ ] 30 months from the earliest claimed priority date (37 C.F.R. 1.492(e)).				$	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total Claims	12 - 20 =		X $ 18.00	$	
Independent claims	2 - 3 =		X $ 78.00	$	
MULTIPLE DEPENDENT CLAIMS (if applicable)			+ $260.00	$	

TOTAL OF ABOVE CALCULATIONS =	$970.00	

Reductions by 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 C.F.R. 1.9, 1.27, 1.28)	$	

SUBTOTAL =	$	

Processing fee of $130.00 for furnishing the English translation later than [ ] 20 [ ] 30 months from the earliest claimed priority date (37 C.F.R. 1.492(f)). +	$	

TOTAL NATIONAL FEE =	$	

Fee for recording the enclosed assignment (37 C.F.R. 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 C.F.R. 3.28,3.31). $40.00 per property +	$40.00	

TOTAL FEES ENCLOSED =	$1,010.00	

	Amount to be refunded	$
	charged	$

a. [ ]   A check in the amount $_____ to cover the above fees is enclosed.

b. [X]   Please charge my Deposit Account No. 14-1270 in the amount of $1,010.00 to cover the above fees. A duplicate copy of this sheet is enclosed.

c. [X]   The Commissioner is hereby authorized to charge any additional fee, with the exception of the Base Issue Fee, which may be required, or credit any overpayment to Deposit Account No. 14-1270. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 C.F.R. 1.494 or 1.495 has not been met, a petition to revive (37 C.F.R. 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Corporate Patent Counsel
Philips Electronics North America Corporation
580 White Plains Road
Tarrytown, NY 10591

DATE OF MAILING:

February 21, 2001

(SIGNATURE)

Michael E. Belk
NAME

33,357
(REGISTRATION NUMBER)

Data allocation in DVD recording.

5

The invention relates to a method for recording encoded information signals as recited in the preamble of claim 1 on a disc like record carrier, such as an optically readable disc. The invention further relates to a recording apparatus for performing the method.

The DVD-Video format for optically readable discs is defined in the DVD Specifications for Read-Only Disc, part 3: Video Specifications (version 1.0, August 1996). Relevant parts therefrom are being disclosed in for instance European Patent Application EP 724 264 and US Patent 5 784 528, respectively document D1 and D2 in the list of referred

10   documents that can be found at the end of this description. Both documents are incorporated by reference herein.

The DVD-Video format as defined in the above mentioned Specifiations for READ-Only Disc and disclosed in D1 and D2 was created for storing movies and other video content on read-only DVD media. Some of the features of the DVD-Video format make it

15   less suitable for real-time recording applications.

However, it is desirable to create and record video streams and associated data structures on rewritable media in real time which are should preferably be almost identical to the structures defined in the DVD-Video format. Such rewritable discs should be play back compatible with the majority of the installed base of consumer DVD-Video players. The

20   method according to the invention describes a novel and inventive format for DVD-Video compatible real-time recording of video streams, referred to hereinafter to as Real Time DVD Video Recording or shortly DVD-Video Recording. The format defined is intended for home video recording on an optical medium which is playback compatible with DVD-Video players.

25   The above-mentioned DVD-Video format demands that data for a Video Title Set (VTS) be allocated contiguously. This implies that Titles cannot be fragmented, except for interleaving. A Title in this respect is defined to be a user accessible unit in Title Search Pointer table of the DVD-Video format. This requirement implies that a user should see a

disc as a linear recording space equivalent to a tape where Titles are presented to user in order of recording.

However, this gives all kinds of problems when part of the data is overwritten with new recordings such as occurs with adding, appending, overwriting or deleting a Title.

A possible solution would be to organize all titles in one Video Title Set, preceded by one Video Title Set Information area (VTSI) and a corresponding Video Manager General Information area (VMGI). However, this has the disadvantage that no longer can be distinguished between different parameter sets for each Title. Such as for example the video parameters picture resolution, frame rate, aspect ratio and bit rate.

In consequence, amongst other things, it is an object of the invention to obviate the above-mentioned disadvantages. According to one of its aspects a method of recording to the invention is characterized as recited in the characterizing part of claim 1.

Now each playable title may have its own management information. Locating the management information in advance of all video objects has the advantage that the video object sets may be regarded as one, composite video object set. This leads to a simplified addressing.

Further advantageous aspects of the invention are recited in other, dependent claims.

These and further aspects and advantages of the invention will be apparent from and elucidated in more detail hereinafter with reference to the disclosure of preferred embodiments, in particular with reference to the appended figures in which,

Fig. 1 illustrates a linear tape model in view of some typical video recording actions;

Fig. 2 illustrates the structure of the video area on a disc according to the DVD Video format; while

Fig. 3 shows in more detail the arrangement of a Video Object Set (VOBs) of Fig. 1 in Video Objects (VOB) and Cells;

Fig. 4 shows a possible arrangement of all Titles in one Video Title Set and

Fig. 5 shows an arrangement of multiple Video Title Sets according to an embodiment of the invention;

Fig. 6 shows a recording apparatus according to a first embodiment of the invention, the respective units therefrom being illustrated in more detail in the following figures of which

Fig. 7 shows an A/V input unit;

Fig. 8 shows a CODEC unit;

Fig. 9 shows an A/V output unit;

Fig. 10 shows a drive unit, and

Fig. 11 shows a system control unit.

Fig. 1 illustrates the concept of a linear tape model in view of some typical recording actions. Fig. 1A illustrates a recording of a first Title 1 in a linear address space of a DVD disk with a remaining free space 2. According to the DVD-Video format, the data is allocated contiguously. Fig. 1B illustrates adding a Title 2 after the first Title 1. Fig. 1C shows appending to the existing Title 1, the append part indicated by the arrow. Part of the Title 2 of Fig. 1C is overwritten. Fig. 1D illustrates partly overwriting the Title 2. Fig. 1E shows deleting Title 3 of Fig. 1D.

Fig. 2 illustrates the DVD video area according to the DVD Video format. It is noted a Lead_in zone, a Lead_out zone and a file system, although present, are not depicted in this figure. The DVD Video area starts with a Video Manager Area (VMG) comprising a Video Manager General Information (VGMI) area, an Video Object Set (VOBS) area and a Duplicate (DUP) area containing a copy of the Video Manager General Information (VGMI) area. A Video Object Set (VOBS) is a collection of contiguously recorded VOBs as will be illustrated hereinafter with reference to Fig. 4.

The Video Manager (VMG) contains information about the recorded video data and a Title Menu. This is a menu that gives the user access to Play Lists and optionally to Full Titles.

A Play List is a Title representing a play back sequence of Cells from one Recording. A Cell is a sequence of one or more Video Object Units (VOBU). The first VOBU of a Cell shall contain video data. A Cell is the basic presentation unit for the Program Chains (PGC), which is a playback sequence of Cells for the presentation of a Menu or a Title.

A full Title represents one Recording. When a Full Title is played, all complete Cells contained in the Recording are played in the order of data allocation in the Video Object Set for Titles in a Video Title Set. (VTSTT_VOBS).

A Recording is a contiguous piece of the Video Object Set for Titles in a
Video Title Set (VTSTT_VOBS). A Video Object (VOB) is (a part of) a sequence of
contiguously recorded Cells, together constituting (a part of) an MPEG-2 Program Stream
containing

5   MPEG-2 Program Stream packs such as defined in ISO/IEC 13818-1 related
to MPEG-2 systems, document D3 in the list of referred documents that can be found at the
end of this description.

The Title Search Pointer Table is one of the elements of the Video Manager.
This table lists all available Play Lists and Full Titles on the disc. It is a starting point for
10   finding the data that is relevant for playing back a Title.

Free Space is a recording which is represented by a Free Space Title in the
Title Search Pointer Table. If the last Recording is free space, it is not represented in this
table. A Free Space Title is a Full Title or Play List Title which cannot be played back as the
related Program Chain Information contains a pre-command to prevent this. Time_Play(),
15   Time_Search(), PTT_Play() and PTT_Search() for a Free Space Title are blocked. The Cell
information in the Program Chain of a Free Space Title may not be reliable.

After the Video Manager (VMG) several Video Title Sets (VTS#1, VTS#2 ..)
may follow, each Video Title Set (VTS) preceded by Video Title Set Information (VSTI)
containing information with respect to the corresponding Video Title Set (VTS) such as
20   audio and video parameters. Following the Video Title Set Information (VTSI) are
corresponding Video Object Set (VOBS) containing MPEG-2 video for respectively Menus
and Titles. Each Video Title Set close with a Duplicate area (DUP) containing a copy of the
Video Title Set Information (VTSI).

Fig. 3 illustrates in more detail the arrangement of a Video Object Set (VOBs)
25   of Fig. 2 in contiguously recorded Video Objects (VOB#1, VOB#2,...) and Cells (C_IDN=1,
C_IDN=2,...). VOBs which are used for the menus are stored in the Video Manager VOBS
(VMGM_VOBS). VOBs which are used for the Titles are stored in the VTS Title VOBS
(VTSTT_VOBS).

Fig. 4 shows a possible arrangement of all Titles in one Video Title Set.
30   Following the Video Manager (VMG) area, is only one Video Title Set preceded by one
Video Title Set Information (VTSI) area and a corresponding Duplicate (DUP) area. The
Video Title Set (VTS) contains in this example two Titles (Title1 and Title 2). The
corresponding Presentation Control Information (PCI) and Data Search Information (DSI),
not shown in Fig 4, is dispersed in corresponding Navigation Packs (NV_PCK) in each

Video Object Unit (VOBU) of the Video Object Set VOBS. According to the DVD Video format, a Video Title Set (VTS) has a separate reference point in the Navigation Pack (NV_PCK). Each Navigation Pack (NV_PCK) has a Logical Block Number (NV_PCK_LBN) that is relative to this reference point (VOBS Offsett in NV-PCK).

5   When the real time data of the Video Object Set (VOBS) is overwritten by a New Title, the Video Title Set Information (VTSI) and the Video Manager Information (VMGI) are updated.

          However, the embodiment according to Fig. 4, is limited in that the Video Title Set (VTS) may only contain one parameter set for video and audio. Such as for example

10   parameters related to aspect ratio, Long Play mode versus Normal Play mode, picture size and Video Coding Mode (MPEG1 or MPEG2) and so on. An embodiment according to the invention that overcomes this disadvantage will be disclosed with reference to Fig. 5

          Fig. 5 shows an arrangement of multiple Video Title Sets according to an embodiment of the invention. This arrangement allows multiple interleaved Video Title Sets

15   (VTS#1, VTS#2...). The real time data of the Video Title Sets (TITLE1, TITLE2, TITLE3) is arranged consecutively while the corresponding Video Title Set Information (VTSI#1, VTSI#2, VTSI#3) is arranged separately. When real time data is overwritten, this info structures are adapted such that only references to the remaining data structures are made. Players do not notice that the real time data of various Video Title Sets is arranged in an

20   interleaved manner. With reference to Fig.5A, which shows only one Title (TITLE1), Fig. 5B shows an additional Title (TITLE2) and Fig.5C two additional Titles (TITLE2 and TITLE3). It is noted that each Navigation Pack (NV-PCK) has a Relative Block Number (NV_PCK_LBN) that is relative to the first sector containing real time data of any Video Title Set (VTS). This is regarded as the common reference point for all real time data.

25   The Video Title Set Information (VTSI#1, VTSI#2, VTSI#3) files are located in a separate area on the disc, preferably in front of any real time data structure. This is also done for the corresponding Duplicate files (DUP1, DUP2, DUP3). Each Video Title Set is allowed to have its own video and audio parameters such as defined in the corresponding Video Title Set Information (VTSI)

30   Fig. 6 shows a recording apparatus according to a first embodiment of the invention. The recording apparatus is composed of several units. One unit is the A/V input unit 1. The A/V input unit 1 receives image and sound signals at antenna input terminal 2 and an external sound/image input terminal 3. The antenna input terminal 2 is adapted to receive broadcasted modulated A/V signals transmitted by either satellite, terrestrial or cable source.

The external sound/image input terminal 3 is adapted to receive a non modulated audio signal or a non-modulated video signals generated directly by respectively an audio or a video source.

Fig. 7 illustrates the A/V input unit 1 in more detail. A tuner 5 , which is connected to the antenna input terminal 2, demodulates the modulated A/V antenna signals and outputs the demodulated signals to a suitable A/V demultiplexing unit 6 for separating audio signals from video signals . An audio A/D converter unit 7 outputs a digital audio signal A and a NTSC/PAL/SECAM decoding unit 8 , comprising a video A/D converter, outputs a digital video signal V. These signals A and V are outputted to a encoding/decoding unit 9, which is illustrated in more detail in Fig. 8. The encoding/decoding unit 9 compresses and encodes the signals A and V, respectively by an audio encoder 10 and a video encoder 11, converts them to a multiplexed and compressed stream conforming to Video Recording specifications, employing a multiplexer 12. To this purposes the audio encoder 10 and video encoder 11 are adapted to perform source compression according to a specific standard for compression, such as for example MPEG-2 for audio and video.

The compressed and multiplexed stream is submitted via a track buffer 13, which absorbs rate fluctuations stemming from intermittent recording and data reproduction from a disc, to a drive unit 14. The encoding/and decoding unit 9 also expands a compressed stream read from a recording medium by the drive unit 14 and outputs separately an audio signal A and a video signal V to the A/V output unit 15. To this purpose, the encoding/decoding unit 9 comprises a suitable A/V decoder 16 for decoding the compressed audio and video source signals.

The A/V output unit 15, which is illustrated in more detail in Fig. 9, comprises an audio D/A converter 17 for outputting sound signals to an external sound output terminal 18. The A/V output unit 15 further comprises a video encoder - D/A converter unit 19 for outputting video signals to an external image output terminal 20.

Fig. 10 illustrates the drive unit 14 in more detail. This unit 14 receives the compressed stream generated by the encoding/decoding unit 9, and adds an error-correction code by a suitable error correction processing unit 21 to the stream. Next a channel modulation/demodulation unit 22 converts the stream with error-correction code to channel bits adapted for recording on a recording medium 23. In case of a DVD-disc the EFM+ modulation scheme is being applied. Recording and reading in case of a recording medium 23 of the optical type, is performed by a laser comprised in an optical head unit 25. A laser power control unit 24 is controlling the laser. Reflected signals from the recording medium

23 are being converted by an amplifier and waveform equalizer circuit 26 into two-value signals. The resultant compressed stream is further demodulated by the modulating/demodulation unit 22 , error corrected by the error correction processing unit 21 and outputted to the encoding/decoding unit 9 via track buffer 13.

5   A servo circuit 27, connected to the amplifier and waveform equalizer circuit 26, controls the positioning of the optical head unit 25 relative to the recording medium 23 and the rotational velocity of the recording medium 23 by controlling rotational driving means 28.

                    A system control unit 29, as shown in Fig. 11, controls each block and
10 perform file control, control information management and track buffer control. To this purpose a system control processing unit 30 is provided that is being connected to memory means 31 loaded with a suitable operation system. Operator input means 32 and operator output means 33 are connected to the memory means 31. The operator input means 32 comprising for instance keying means and the operator output means comprising display
15 means.

                    Although the invention has been described with reference to preferred embodiments thereof, it is to be understood that these are not limitative examples. Thus, various modifications thereof may become apparent to those skilled in the art, without departing from the scope of the invention, as defined by the claims. The invention can be
20 implemented by means of both hardware and software, and that several "means" may be represented by the same item of hardware. Further, the invention lies in each and every novel feature or combination of features. It is also remarked that the word 'comprising' does not exclude the presence of other elements or steps than those listed in a claim. Any reference signs do not limit the scope of the claims.

LIST OF REFERRED DOCUMENTS

(D1) European Patent Application EP 724 264

(D2) US Patent 5 784 528

5   (D3) ISO/IEC 13818-1 : 1995 Information Technology – Generic Coding of moving pictures
    and associated audio information : Part 1 : Systems (MPEG2-systems)

CLAIMS:

1.   A method of recording an encoded bit stream, said encoded bit stream
representing a plurality of video objects comprising a sequence of cells together constituting
a part of an MPEG2 Program Stream, on a disc like record carrier, such as an optical disc,
said method comprising:

5   recording a series of contiguously arranged video objects as a video object set
on said disc,

              recording management information comprising attribute information of the
recorded video object set , wherein

              said management information precedes said video object set and constitutes
10   therewith a playable video title,

              characterized by,

              recording at least a second series of contiguously arranged video objects
constituting a second video object set and corresponding second management information on
said disc, wherein

15   the at least two video object sets are combined into a single video object set
and the first and the at least second management information precedes said combined video
object set.

2.   A method according to claim 1, wherein each video object contains navigation
20   information employing a common reference address.

3.   A method according to claim 2, wherein said reference address is at the
beginning of the first series of video objects following the management information.

25   4.   A method according to claim 3, wherein the attribute information comprises
picture resolution and/or video coding mode of the video object set.

5.   A method according to claim 4, wherein a playable video title, a video object
set and the management information corresponds respectively to a Video Title Set (VTS), a

Video Title Set Video Object Set (VTSTT-VOBS) and the Video Title Set Information (VTSI) of the DVD-Read Only Video Specification.

6.   A method according to claim 5, wherein the navigation information corresponds to a Navigation Pack (NV-PCK) of the DVD-Read Only Video Specification and the common reference address corresponds to the first logical block number of the first Video Object Set of the series of Video Objects Sets.

7.   A recording apparatus for recording an encoded bit stream, representing a plurality of video objects comprising a sequence of cells together constituting a part of an MPEG2 Program Stream, on a disc like record carrier, such as an optical disc, the recording apparatus comprises

recording means for recording a series of contiguously arranged video objects as a video object set on said disc and for recording management information comprising attribute information of the recorded video object set,

wherein said management information precedes said video object set and constitutes therewith a playable video title,

characterized in that, the recording apparatus comprises

system control means adapted to control recording of at least a second series of contiguously arranged video objects constituting a second video object set and corresponding second management information on said disc, wherein

the at least two video object sets are combined into a single video object set and the first and the at least second management information precedes said combined video object set.

8.   A recording apparatus according to claim 7, characterized in that,
the system control means are adapted to include in each video object navigation information employing a common reference address.

9.   A recording apparatus according to claim 8, wherein said common reference address is at the beginning of the first series of video objects following the management information.

10.   A recording apparatus according to claim 9, characterized in that,

the system control means are adapted to include picture resolution and/or a video coding mode of the video object set as attribute information.

11.   A recording apparatus according to claim 10, wherein a playable video title, a video object set and the management information corresponds respectively to a Video Title Set (VTS), a Video Title Set Video Object Set (VTSTT-VOBS) and the Video Title Set Information (VTSI) of the DVD-Read Only Video Specification.

12.   A recording apparatus according to claim 11, wherein the navigation information corresponds to a Navigation Pack (NV-PCK) of the DVD-Read Only Video Specification and the common reference address corresponds to the first logical block number of the first Video Object Set of the series of Video Objects Sets.

ABSTRACT:

          A method of recording an encoded bit stream, said encoded bit stream
representing a plurality of video objects comprising a sequence of cells together constituting
a part of an MPEG2 Program Stream, on a disc like record carrier, such as an optical disc.
The method comprises recording multiple series of contiguously arranged video objects
5   constituting multiple video object sets on said disc with corresponding multiple management
information comprising attribute information of the corresponding video object set. The
management information constituting with a video object set a playable video title. The
multiple video object sets are combined into a single combined video object set and the
multiple management information is preceding said combined video object set.

10   Fig. 5c

FIG. 1A

FIG. 1B

FIG. 1C

FIG. 1D

FIG. 1E

VMGI DUP VTSI
   VOBS   VOBS   VOBS   DUP

Video for menu

Video for titles

FIG. 2

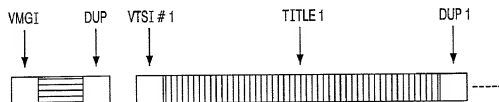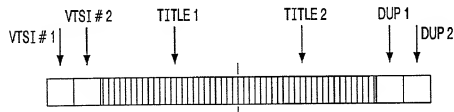| VOB # 1 | VOB # 2 | VOB # 3 | ------- | VOB # M |

| C_IDN = 1 | C_IDN = 2 | | ------- | C_IDN = N |
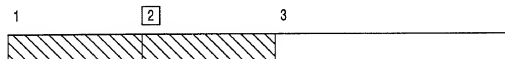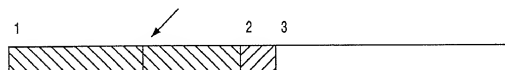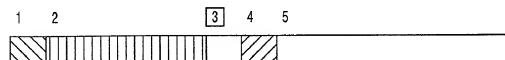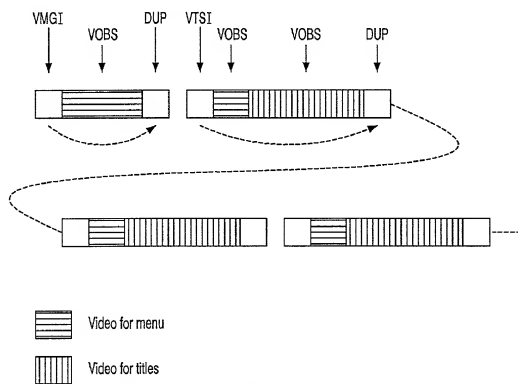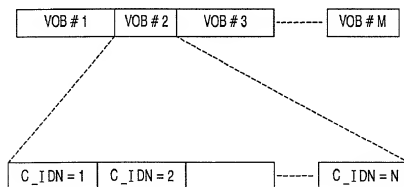
FIG. 3
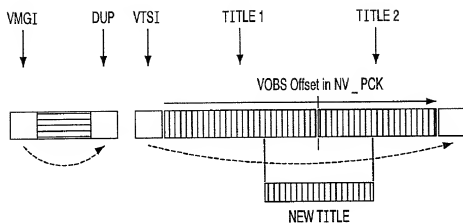
FIG. 4

FIG. 5A

FIG. 5B
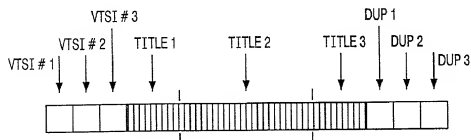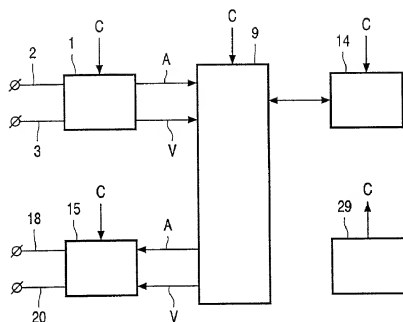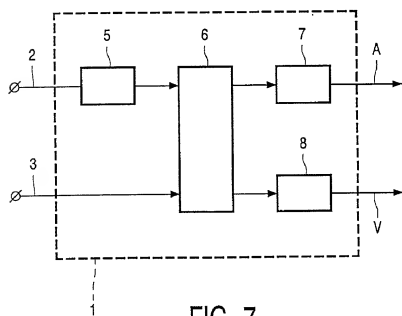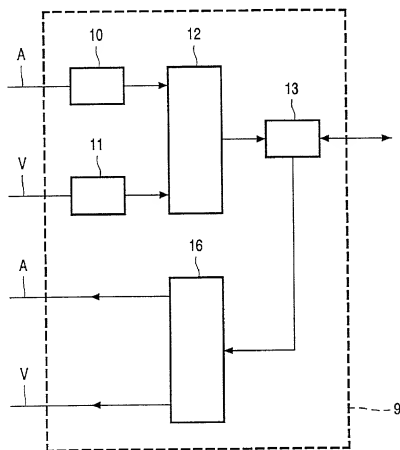

FIG. 5C

4/6

FIG. 6

FIG. 7

FIG. 8

FIG. 9

FIG. 10
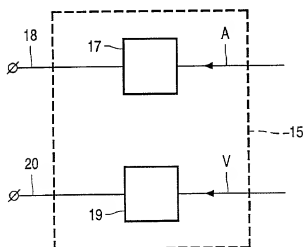

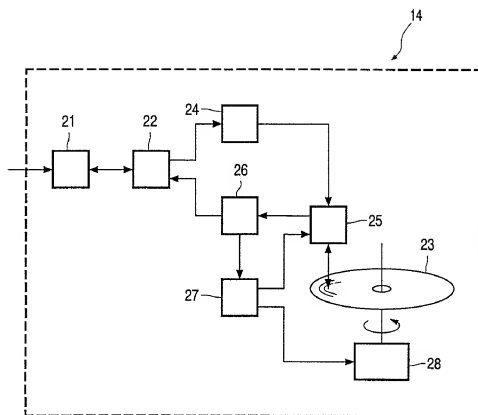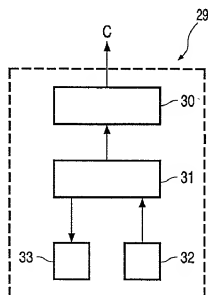FIG. 11

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of   Atty. Docket

WIEBE DE HAAN   PHN 17,522

Filed: CONCURRENTLY

Title: DATA ALLOCATION IN DVD RECORDING

Commissioner for Patents, Washington, D.C. 20231
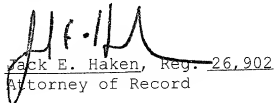
APPOINTMENT OF ASSOCIATES

Sir:

The undersigned Attorney of Record hereby revokes all prior appointments (if any) of Associate Attorney(s) or Agent(s) in the above-captioned case and appoints:

MICHAEL E. BELK   **(Registration No. 33,357)**

c/o U.S. PHILIPS CORPORATION, Intellectual Property Department, 580 White Plains Road, Tarrytown, New York 10591, his Associate Attorney(s)/Agent(s) with all the usual powers to prosecute the above-identified application and any division or continuation thereof, to make alterations and amendments therein, and to transact all business in the Patent and Trademark Office connected therewith.

ALL CORRESPONDENCE CONCERNING THIS APPLICATION AND THE LETTERS PATENT WHEN GRANTED SHOULD BE ADDRESSED TO THE UNDERSIGNED ATTORNEY OF RECORD.

Respectfully,

Jack E. Haken, Reg. 26,902
Attorney of Record

Dated at Tarrytown, New York
on February 19, 2001.

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY (includes Reference to PCT International Applications)	ATTORNEY'S DOCKET NUMBER **PHN 17.522 US**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **"Data allocation in DVD recording"**
the specification of which (check only one item below):

☐ is attached hereto.

☐ was filed as United States application

Serial No _____

on _____

and was amended

on _____

☒ was filed as PCT international application

Number _____PCT/EP00/05891_____

on _____23 June 2000_____

and was amended under PCT Article 19

_____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:

COUNTRY	APPLICATION NUMBER	DATE OF FILING DAY, MONTH, YEAR	PRIORITY CLAIMED UNDER 35 USC 119
Europe	**99202106.3**	**29 June 1999**	**YES**

Combined Declaration For Patent Application and Power of Attorney (Continued) (includes Reference to PCT International Applications)	Attorneys Docket Number **PHN 17.522 US**

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) abnd/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (List name and registration number)

Algy Tamoshunas Reg. No. 27,677 Jack E. Haken, Reg. No. 26,902	Direct Telephone Calls to: (name and telephone number) (914)332-0222

	FULL NAME OF INVENTOR	FAMILY NAME **DE HAAN**	FIRST GIVEN NAME **Wiebe**	SECONDE GIVEN NAME
201	RESIDENCE & CITIZENSHIP	CITY **Eindhoven** N L X	STATE OR FOREIGN COUNTRY **The Netherlands**	COUNTRY OF CITIZENSHIP **The Netherlands**
	POST OFFICE ADDRESS	POST OFFICE ADDRESS **Prof. Holstlaan 6**	CITY **5656 AA Eindhoven**	STATE & ZIP CODE/COUNTRY **The Netherlands**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true: and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 if Title 18 of the United states Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 201

DATE   18 January 2001

U.S. DEPARTMENT OF COMMERCE- Patent and Trademarks Office
(July 1994)